

COMPETITION IN THE CONTINENTAL EUROPEAN ELECTRICITY MARKET: DESPAIR OR WORK IN PROGRESS?

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1 INTRODUCTION

The restructuring of electricity markets in most Continental European (CE) countries started in the late 1990s, and, with the exception of Spain which initiated its own electricity pool in 1997, is still going on. This process was triggered by the European Commission directive, 1996(EC), “*Directive for a common electricity market*”. The major motivation for this directive was the EC’s conviction that liberalization, price deregulation and privatization would directly lead to competition in generating, as well as supply which would then result in lower prices for the whole of Europe.

The initial intention of the European Commission was the creation of a common European electricity market, but this area still consists of at least seven different sub-markets separated by insufficient transmission capacities, and straightforward to some extent considerable price differences (Fig. 1.1).

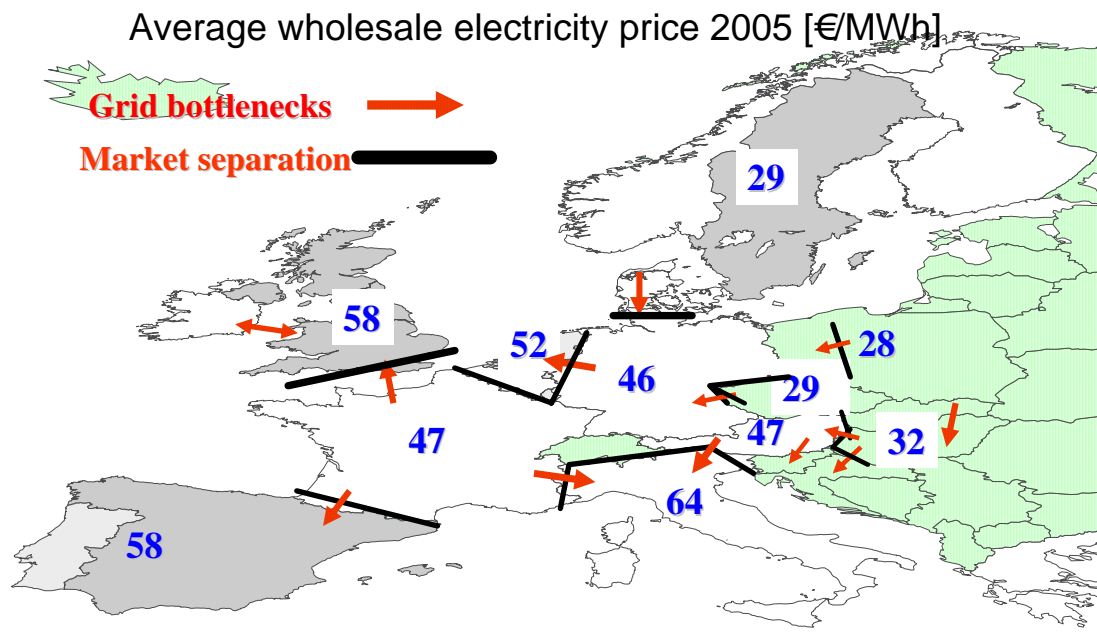


Figure 1.1. Transmission grid bottlenecks and wholesale electricity prices in Europe 2005

The goal of this paper is to analyze the evolution of the European electricity markets and to discuss future developments with respect to competition¹. It covers most of what is currently called “Continental Europe” (CE): Austria, Belgium, Czech Republic, France, Germany, Hungary, Poland, Portugal, Slovenia, Slovakia, Spain, and Switzerland.

2 BACKGROUND: FACTS, FIGURES

Development of demand and supply

About 2300 TWh were consumed in the CE area in 2004. The largest electricity markets are currently in Germany, France, Italy, and Spain. Highest per capita demand was in Luxemburg, Belgium and Switzerland. The lowest per capita demand was in Poland, Hungary, Portugal, and Slovakia. Demand growth per year was strongest in Spain (+5.0%), Portugal (+4.9%), and Austria (+3.1%). In Poland and Germany demand increased by about only 1%/yr. In the whole of the CE, electricity consumption grew from 1% to 3% per year between 2000 and 2004, see Fig. 2.1.

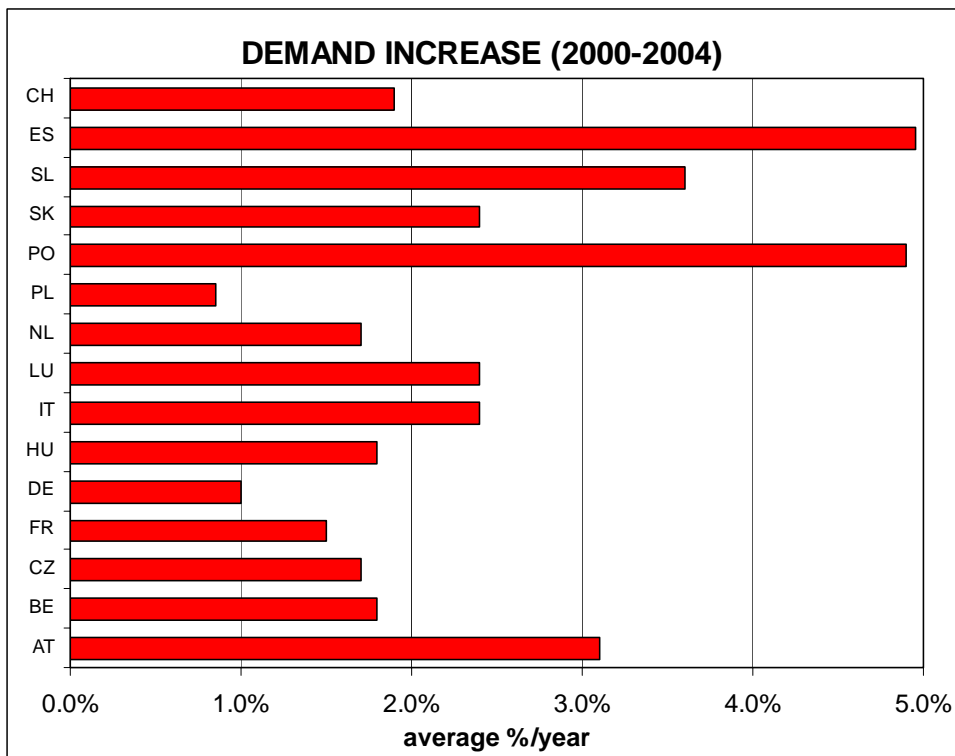
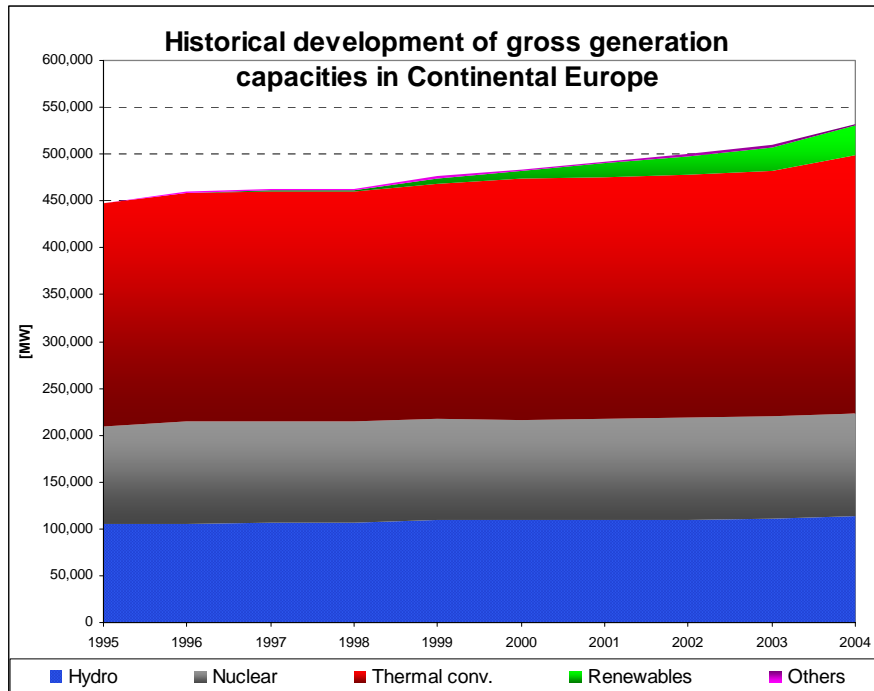


Figure 2.1. Growth of electricity demand in CE countries (Average 2000-2004)

Figure 2.2 depicts the evolution of generation capacity over the last 10 years in CE. The growth in capacity is mainly from wind power and fossil fuel power plants.

¹ This paper summarizes and updates the work presented in Haas et al (2006).

Figure 2.2. Evolution of generation capacity in CE 1995-2004 (Source: UCTE (2005), national reports)



3 COMPARISON OF DEVELOPMENTS BY COUNTRY

The developments towards competition in the countries and sub-markets have been quite different so far, as can be seen in Table 1.

Germany started with a 100% market opening without any restructuring of the industry. Later on, a rapid merger process took place, resulting in the disappearance of half the generating – transmission companies. Moreover, the German idea of competition was unique because no regulatory authority was created. It soon became evident that high grid charges, discrimination with respect to access to the distribution network, and high transaction costs of the negotiated TPA were major problems for this model, in particular, because of the hundreds of regional or local distribution grid companies. Finally, in 2005 a regulatory body was created.

In Austria the market was legally opened in two steps: 33% in 1999 and 100% in 2001. In 2001 a voluntary spot market – EXAA – was founded. Since 2000 a discussion has been ongoing concerning several models of national and cross-border mergers and takeovers. Yet, so far only minority shares of some suppliers have been sold to the French EdF, or the German EnBW and RWE.

In France, more than 90% of capacity is concentrated in EdF, with two potential competitors who have been institutionally linked to it. These links have been weakened in

order to make them independent in the near future, and have been opened to new entrants, notably Electrabel and Enel. These “fringe generators” are CNR, a hydro generator, and SNET, a subsidiary of Charbonnages de France which produces 8.5 TWh by dispatchable coal plants. The transmission business was made a subsidiary in the second half of 2005, and could be floated as soon as 2006. EDF, itself will put around 20% of its shares on the market before the end of 2005.

Table 1. Differences in reforming and market design in various countries

	Process of market opening	Mandatory pool	Voluntary Day Ahead Exchange	Futures market	Privatisation process	Divestment of generation capacity	Takeover, Merger within the country
AT	Fast (2 years)	No	YES (EXAA)	YES (EEX)	Moderate	No	Under discussion
BE	Slow	No	No	No	*)	No	No
CZ	Moderate	No	Yes (2004)	No	No	No	No
DE	Very fast	No	YES	Yes	*)	No	YES, half electricity generation plus Ruhrgas
FR	Slow	No	Yes	No	No	No	YES, 2 fringe generators
HU	Moderate	No	No	No	Moderate	No	No
IT	Slow	No	Yes (since 2004)	No	Yes	Yes	YES, mainly abroad (ENEL in SK)
LU	Slow	No	No	No	N.A.	No	No
NL	Moderate	No	Yes (APX)	No	Yes	No	YES, mainly from abroad
PL	Fast	No	Yes	No	Moderate	Yes	Moderate
PO	Moderate		No, but intended with Spain	No	No	Yes, moderate	Moderate abroad
SK	Moderate	No	No	No	Yes	No	No
SL	Moderate	No	Yes (2003)	No	Moderate	Moderate	No
ES	Moderate	Yes	No	No	*)	No	No
CH	No	No	No	Yes (EEX)	*)	No	No

*) Major generators were already largely private before liberalization started

The major feature, in the Czech Republic and the Slovak Republic, of restructuring was the break-up of the former vertically integrated public utility into generation, grid and supply companies. Furthermore, in the meantime, parts of the generation and supply companies have been privatised. In 1993, the Czech Republic spread about 31% of CEZ shares among investors (individuals and funds). Because an attractive offer was not received for the rest of CEZ, further privatisation has been delayed so far. In the Slovak Republic, 66% of the generator SE is being privatised (2005).

In Hungary, Slovenia and Italy steps were taken to reduce the power of the former generation monopoly.. Currently, however, it appears that in these countries the former monopolists still have a strong position in the market (ENEL kept 50 % of the Italian

generation capacity, plus the cash made by selling the rest of its plants - as “Gencos” or by the sale of transmission and distribution grid shares).

In the Netherlands, until 1998, generation was dominated by four large regional companies: EPZ, EPON, UNA and EZH, who jointly owned the generator SEP. The Dutch government’s initial idea was to combine liberalization in supply with the concentration in generation by merging the four companies and SEP. This attempt should have created a “national champion” that would be able to compete on the European scene. (van Damme 2005). Yet, the merger failed because these companies could not agree. The major restructuring feature was then the sell out of half of the former largely public owned generator to companies from abroad (Electrabel, Reliant, E.ON).

Another trend is the vertical reintegration of generators and suppliers e.g. by the purchase of power plants by suppliers. After a series of mergers and takeovers, two large Dutch companies survived and are now integrated into generation, distribution and supply (ESSENT and NUON). The TSO TEnNET and its subsidiary, the PX of Amsterdam, have been 100 % state owned for some years.

In Belgium, the process has been dominated by the incumbent company Electrabel, which is controlled by the Suez group (France) through the intermediate engineering contractor Tractebel. A “second” Electrabel was developed outside Belgium by collecting 15 000 MWe plant capacity, mainly in Europe (the Netherlands, Poland, Hungary, Italy, France, Spain). In spring 1999, Tractebel pretended to become a liberalisation champion. They split their companies into parts while keeping control over all of them all. In 2005 however, Electrabel and Tractebel were merged to increase their stock market size. They understood that being one of the oligopolistic players on the European and world wide market was more profitable than to stay linked to the limited Belgian market (Verbruggen A. Vanderstappen E., 1999).

The Spanish approach initially looked like being one of the most ambitious. However, the structure of the industry with two dominant producers integrated in distribution and supply was never changed. As a result, after the introduction of a centralised pool² in 1998, the issue of market power exerted by the two largest incumbent generators was very soon raised. Crampes & Fabra state in (2005): *“The 1997 reform did not succeed in introducing effective competition but retained an opaque regulation which has been subject to continuous*

² While the participation in this pool is in fact mandatory, market participants are also allowed to enter into physical bilateral contracts (Crampes & Fabra 2005).

governmental interventionism. ...” Note, that due to scarce interconnection capacity between Spain and neighbouring countries foreign utilities have not been very influential in the Spanish pool so far. The issue of market power is still – in 2005 – the major problem in Spain and could be reinforced by the take over attempt of the first gas company Gas Natural of the first electrician Endesa. In 2005, an investigation in the competitiveness of the Spanish market was conducted by I. Perez-Arriaga, and the new government is reviewing the rules with the view to changing them. As well as transmission, there were only four significant companies, all largely private and vertically integrated. While the former government blocked the merger of the two largest utilities (Endesa and Iberdrola), it allowed the takeover of Hidrocanabrico by EdF and by the formerly Portuguese, EDP. Furthermore, when Endesa put 5% of its activities up for sale, it was bought by Enel of Italy, as Endesa had just taken control of Elettrogen in Italy (Soares (2003)).

In Portugal, the hard process of the privatisation of the EDP, and the creation of a competitive affiliate (SENV) has been shaping the reform process so far. The idea was to split the national Electricity System into two sub-systems: the Public Utility System SEP and the independent system SENV. SEP and SENV are not generators, but sub-systems of the National Electrical System. The former has to satisfy demand under the principal of a uniform tariff on the mainland, which moderates the application of market rules. It also has centralised planning. The latter has no responsibility for public service and comprises of two sub-systems: the non-binding system (SENV) and the Independent Producers. The SENV operates according to market rules and comprises of producers, distributors and eligible customers. Non-binding producers and customers are allowed to use the public utility system grid for a fee (Soares (1993)).

Other objectives, since the start of reform in Portugal, have been to create a “national champion” by merging gas and electricity monopolies (which was refused by the European Competition Authority) and a joint Iberian market with Spain (The MIBEL project). Yet, so far this Mibel has been repeatedly postponed and currently, it is being planned to put it into practice in 2006. One problem is that “without substantial enhancements to interconnection, it should be clear that the impact of the Spanish market on the highly concentrated, Portuguese market can only be marginal, and the impact of the Portuguese wholesale market on the Spanish minimal”. (PiE 437, p.3).

With respect to divestment of capacity, Italy was the only country in Continental Europe where the former state-owned champion had been privatized and had to give away generation

capacity (Lorenzoni (2003)). Currently, however, ENEL is in a comfortable position because it is still the largest electricity producer in a market with congested borders and a congested internal grid and can act as a private company with the cash generated by its divestiture. ENEL has now a market share of 50% of generation capacity, and an Italian power exchange has been opened.

In Switzerland a draft law providing for ultimately complete opening of the Swiss electricity market was rejected by the Swiss population in a referendum in 2002. Another draft law providing for market opening for larger industrial customers was provided for discussion in 2004. Given the legislative procedure and a possible new referendum, first steps of market opening can be expected, in the case that the law is finally approved, at the earliest in 2008 (CEC, 2005).

Eastern European countries are physically integrated within the western European grid, and have taken the first steps towards adopting the “western model” with regulated third party access for larger customers. There has been partial privatisation of companies within the industry (except in Slovenia) and the reduction of barriers to international trade. But, like the rest of Europe, each reform is unfinished in regard to its market design and the existing market power of the dominant player.

The typical Eastern European market structure is made up of a dominant wholesaler and a competitive fringe. The competitive fringe is strongly limited by long-term contract structures that often allow the dominant wholesaler to deploy the generators, so being able to deny other companies’ access to surplus capacity that has not been contracted in advance. (Kaderjak, 2005) It is also the case concerning the support for renewable energy which often takes the form of a feed-in tariff under which the power is sold to the dominant wholesaler, thus consolidating its position even more.

Poland and Hungary were the forerunners of reform in Eastern Europe. Poland introduced TPA in 1998, and the Czech Republic and Hungary conducted unbundling of generation and transmission in the early 1990s. Hungary established a regulator in 1994 and started privatisation of supply and most of generation in 1995. At the same time the gradual removal of price subsidies was started (Kaderjak, 2005).

4 MERGERS, TAKEOVERS AND MARKET CONCENTRATION

The industrial reference model for electricity completely changed between 1995 and 2001. It has shifted from a preference for vertical disintegration between generation, trading, and sales to final consumers toward a preference for vertical reintegration of production, trading,

and final sales. Among the best illustrations of the changing “industrial paradigm” are the shifting attitudes of financial markets, financial analysts, rating agencies, and banks vis-à-vis disintegrated structures, especially concerning “pure” trading and “pure” generation as in Merchant Plants. Bankers and financiers have finally joined force with stockholders and managers of firms operating in competitive energy markets, and concluded that vertical integration is the best protection against volatility and the cyclical nature of markets.

Hence, for effective competition, a large number of companies is required. This has been clearly proven by the English and Welsh examples, where the number of generators has been increased several times by the regulatory authority (as well as by investors, notably the regional distribution & supply companies, the RECs).

The "merger-mania" within the CE after the start of liberalization indicates that the major strategy of the bigger incumbent utilities is competing by merging so as to purchase market shares.

In many Eastern European countries, national companies have been sold to strategic investors from abroad, with EdF E.On, RWE, Electrabel and Vattenfall particularly active. In reaction, some countries like Czech Republic, Slovakia & Slovenia have been concerned with the retention of national champions. These national champions have the size to survive among the larger European groups with their unfortunate consequences for the level of competition within their national market and the European competitive game. The vested interests of the dominant incumbents in this region are encouraging them to fight against greater competition which is being pushed by further reforms.

With respect to market shares in CE, in 1998 ten generators owned 60% of the generation capacities, in 2002 it was only six (see Codognet et al (2005)). Thomas (2003) suspects that finally European-wide only “seven brothers” will remain as large generators. Of particular concern, with respect to competition, is the situation in Central Europe (France, Germany, the Benelux countries and Austria). The concentration process in the electricity generation market was especially fulminous in Germany. Mez (2003) provides an impressive and detailed description of this process. A different but converging picture is described in Finon (2003) and Glachant/Finon (2005). They portray how a dominant player like EdF in France can benefit from liberalization by exerting market power in the home market, while at the same time is pursuing an aggressive acquisition policy abroad. Verbruggen et al (1999) show the same for Electrabel – Distrigas group in Belgium.

Table 2 depicts the current market structure in CE countries. In most countries market structure is highly problematic particularly when the national grid is poorly connected with adjacent markets. It is of specific interest that potential imports vary considerably. The small countries Luxemburg, Slovakia, Slovenia, Austria, and Hungary have a potential of more than 70%. In the large countries Spain, France, and Italy the potential is less than 20%.

Table 2. Market shares of largest generators in various countries 2004 (Source: company reports, Power in Europe, personal information)

	Largest (%)	3 largest (%)	Import potential (TWh, %)	Largest generator	2nd largest generator	3rd largest generator	4th largest generator
AT	53	76	37.7 (73%)	VERBUND (53%, 29.8 TWh)	TIWAG (13%, 6.7 TWh)	WIENSTROM (10%, 5.8 TWh)	EStAG (9%, 5.0 TWh)
BE	85	94	40.3 (46%)	ELECTRABEL (85%, 75 TWh)	SPE (9%, 8 TWh)		
CZ	73	82	30.7 (50%)	CEZ (73%)	Pražská teplárenská (5%)	Energotrans (4%)	Dalkia (3%)
DE	34	71	122.6 (28%)	RWE (34%)	E-ON (23%)	Vattenfall (14%)	EnBW (10%)
FR	89	94	106.9 (19%)	EdF (89%, 487 TWh)	CNR (3%, 16 TWh)	SNET (2%, 9 TWh)	
HU	46	65	27.2 (71%)	MVM (46%)			
IT	46	65	52.6 (16%)	ENEL (46%, 165 TWh)	Edison (12%, 20 TWh)	Edipower (7%, 10 TWh)	Endesa (6%, 5 TWh)
LU	65	90	8.8 (139%)	Cegedel (65%)	Sotel (25%)		
NL	25	80	41.2 (37%)	Electrabel-Ned (17.9 TWh)	ESSENT (14.65 TWh)	NUON (14.5 TWh)	E-ON Benelux (9.9 TWh)
PL	30	52	30.7 (21%)	BOT (30%)	PKE (13%)	Kozienice (9%)	PAK (9%)
PO	65	80	8.8 (19%)	SEP	SENV		
SK	84	89	26.3 (101%)	Slovenske Elektrarne (26 TWh, 84%)	PPC (3.5 %)	TEKO (1.4 %)	
SL	54	98	18.4 (150%)	HSE (7.1 TWh, 54%)	ELES/GEN (5.2 TWh, 39%)	TET (0.6 TWh, 5%)	
ES	39	78	19.3 (8%)	Endesa (39%)	Iberdrola (28%)	Union Fenosa (11%)	Hidrocan tabrico (7%)
CH	26	53	74.9 (137%)	NOK (25%, 15.9 TWh)	BKW (15%, 9.4 TWh)	ATEL (13%, 8.3 TWh)	EWZ (7%, 4.3 TWh)

5 WHOLESALE ELECTRICITY PRICE DEVELOPMENT

How electricity prices developed after restructuring is of special interest. Figure 5.1 depicts the price evolution in CE in 1999-2005. With the exception of Italy in 2004 there was some convergence of wholesale electricity spot market prices. Moreover, while volatility in

2002 and 2003 was rather high it became moderate during 2004. In the first half of 2005, prices in Western markets increased, while prices in Poland remained stable in 2004.

From Fig. 5.1 the following observations can be made: (i) In Western Europe, prices increased were relative to the frame and timing of liberalization; (ii) the price level is highest in areas where capacity margin is smaller, and cross-border transmission capacity is congested (Italy, The Netherlands); (iii) prices have been highest in years when there was low hydro or low nuclear availability; (iv) however wholesale prices are increasing and are converging in markets which are connected by sufficient transmission capacity .

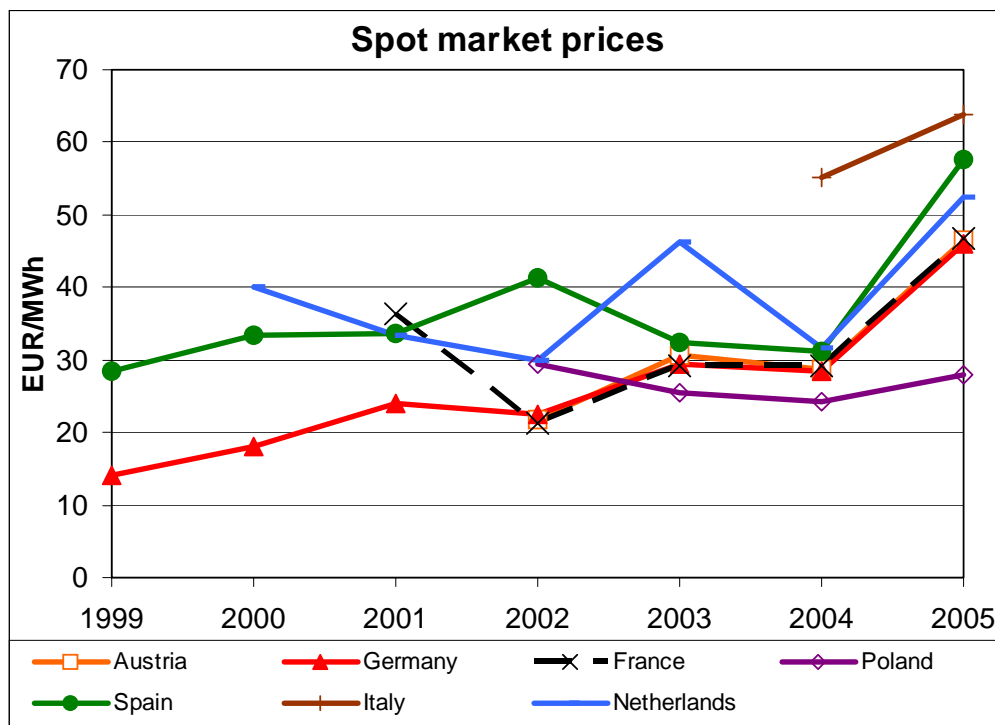


Figure 5.1. Development of electricity prices in CE 1999-2005 (Source: Homepages of the power exchanges)

Therefore a major question is, are these prices a result of competition? That is to say, do these prices reflect the marginal costs of the generation set or are they influenced by some kind of market power. As e.g. Muesgens (2004) shows from 2001 to 2003 in Germany, the difference between wholesale electricity prices and short term marginal generation costs have increased continuously, possibly due to increasing exercise of market power.

6 PERSPECTIVES FOR SUPPLY SECURITY IN GENERATION

The development of generation capacity in comparison to load is of high relevance for future supply security. Fig. 6.1 depicts the currently looming developments of load and

generation capacity³. This picture is not the same in different countries. In Italy, load has already surpassed available net capacity. In Spain & Portugal the danger of shortages exists (Alba (2003), (Crampes & Fabra (2005): “With no plant entering into operation from 1998 to 2002, and a steep increase in demand ... the system has indeed been operating below acceptable adequacy since 2000”). In Western Europe (FR, DE, CH, AT) the current trend implies generation capacity needs by 2007 or 2008.

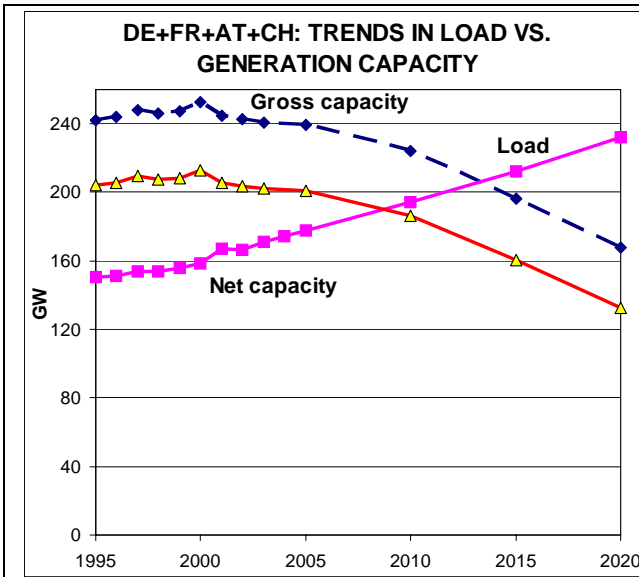


Figure 6.1a: Current and future trend of generation capacity and load in Western Europe

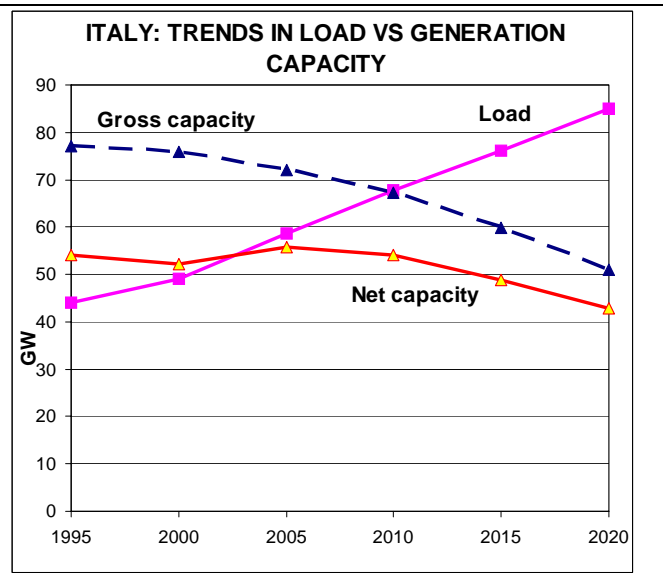


Figure 6.1b: Current and future trend of generation capacity and load in Italy

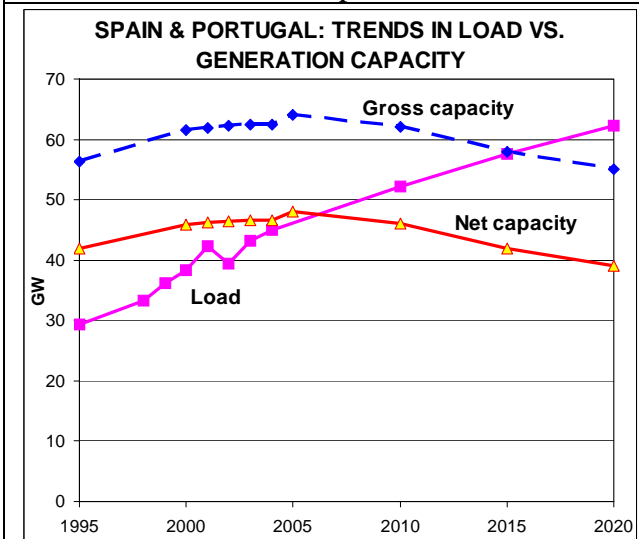


Figure 6.1c: Trends of generation capacity and load on the Iberian peninsula

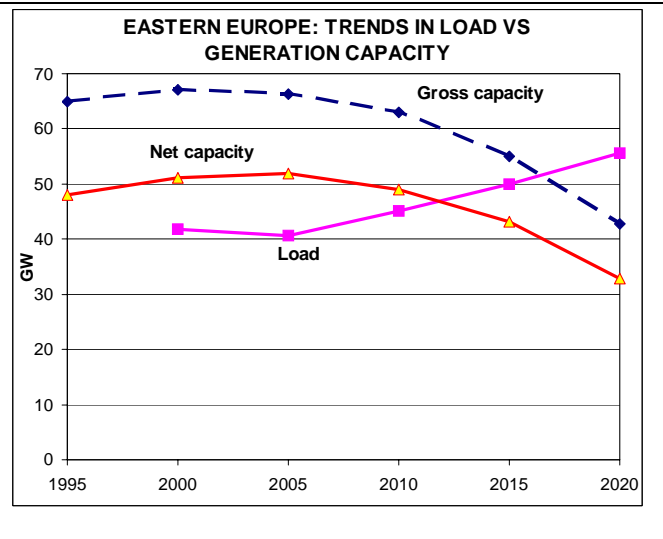


Figure 6.1d: Trends of generation capacity and load in Eastern Europe

³ The figures for load forecast are taken from UCTE (2005). The figures for the trend in generation capacities are based on existing capacities, approved new capacities, decommissioning of nuclear due to IAEA and a limited lifetime of fossil plants of 40 years

Eastern Europe (CZ, HU, PL, SK, SL) has adequate generation capacity for the foreseeable future, and will continue to be heavily inclined towards coal and nuclear power. Furthermore, domestic production of coal would make it politically awkward to reduce the share of coal-fired generation, despite environmental concerns. It seems that necessary environmental investments will be covered by customers through electricity price increases. As most of the power plants, like the coal companies, are still state owned, they are not much interested in switching to other fuels like gas. Additionally, higher gas prices are not attracting many investors. Nuclear power is controversial, but does have environmental benefits in a carbon-constrained world. Concerning the limited support for renewable generation, regulatory and political uncertainty has also prevented more than small-scale deployment of renewable technologies. The one remaining major uncertainty in Eastern European countries is the magnitude of demand growth.

7 CONCLUSIONS

While the liberalized CE electricity market is still under construction, some conclusions regarding developments so far can already be drawn.

- Firstly, liberalization in CE started about a decade after the advances made in the UK and Norway. However, it seems that the CE countries did not learn much from their experience regarding conditions for competition. Instead of divesting generation capacity and increasing the number of competitors (as recommended by Newbery & Pollitt (1997)) most countries pursued mergers (DE, NL), retained oligopolies (NL, ES, AT, CH), private monopoly (BE), or supported the concept of national champions (PO, FR). Only Italy has chosen a quite different strategy of divestment of the former national champion ENEL.
- Secondly, the CE electricity market is the largest regional market in Europe, and its geographical position implies that further progress towards an integrated electricity market in Europe will depend strongly on the development of this market (Jamassb/Pollitt (2005)). France and Germany play a key role within this market because of their size and geographically central positions.
- Thirdly, the major obstacle for a common market that works reasonably, is currently, a general lack of competition in virtually all local and national wholesale as well as retail electricity markets. The number of competitors is too low, or barriers to entry are too high, or incentives to collude are too high.

- Fourthly, the European Commission itself is in an ambiguous position. On the one hand, it still advocates the goal of a European-wide common electricity market, by the year, it is said, 2012. On the other hand, only very weak light-handed measures are being implemented on the European scale. One of the major problems is still, and will be, that the market power of the large – and still growing – incumbent generators cannot be tackled by the European Commission alone because it cannot ask for deep structural or regulatory remedies. The second one is the behavior of TSOs being not unbundled from generation or from the interests of their national block of stakeholders. The European Commission acts weakly because it would require severe interferences in the Member States' institutions and policies. Only the European Competition Authority (DG COMP) and the European Court of Justice have some power to pull national governments and national entities out of their retrenchments. How it can be done, is still to be seen. So currently it is not likely that the measures described above will be implemented. As Newbery (2002) argued “*the EU lacks the necessary legislative and regulatory power to mitigate generator market power. Unless markets are made more contestable, transmission capacity expanded and adequate generation capacity ensured, liberalization may lead to higher prices*”. The national governments pursue quite different objectives. In some countries it is obvious that, so far, governments support their national utilities, and are not eager to introduce effective competition. Hence, it can not be taken for granted that one integrated European electricity market will ever emerge. A second-best solution would be to foster competition in regional sub- markets by incremental reduction of barriers to cross-border trade as well as to the inclusion of generators and suppliers, thus paving the way to more confrontation between electricity and gas companies in the dual fuel markets.
- A very ambiguous role is played by privatization. On the one hand, there is currently a strong majority in Europe who see privatization as the politically correct solution regarding ownership⁴. On the other hand, privatization frequently means only the maximize of the market value of the shares sold to the buyers, being ...the large incumbent players (the “seven brothers” depicted by (Thomas (2003))). This problem partially applies to EdF, the most important looming privatization case. Of course, the French government is not looking to reducing the potential value of its EDF shares (50 to 60 billions of euros). Therefore it has no economic incentive in strengthening competition

⁴ Note, that this is not the opinion of all authors of this paper.

at home and it prefers, instead, strengthening the position of its own champion in France as well as in the EU markets.

- Finally, it is stated that currently in most regions there are still sufficient spare capacities in generation and transmission available. The definitive litmus test for liberalization will come in every sub-market in CE at the point-of-time when the bulk of excess capacities has disappeared and demand has come close to available capacities. That is to say, the most important problem is to provide long term incentives for investments in the upgrade and in new generation and transmission capacities, as well as in demand-side efficiency and demand responsive measures. This issue is especially relevant in the context of decentralized – vs - further centralized development of the electricity supply system.

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